



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

**REGION 2**

Land, Chemicals, and Redevelopment Division, Land and Redevelopment Programs Branch  
Base Program Management Section  
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NEW YORK, NY 10007-1866

**MEMORANDUM**

DATE: July 15, 2020

SUBJECT: Comments on the Hatco AOC 25A Ecological Risk Assessment Work Plan prepared by Windward dated July 1, 2020

TO: Steve Ferreira, Project Manager  
LCRD, Land and Redevelopment Programs Branch, Corrective Action Section

FROM: Gina Ferreira, Environmental Scientist  
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**Note To Project Manager**

This technical comment memo contains a summary, general and specific comments, and recommendations for your review and consideration. If you have any questions or concerns about these comments, you can contact me in person or via email or telephone. When the final USEPA letter to the responsible party or their contractor is sent out, please send me an electronic or paper copy of it for my records.

**Summary**

The following work plan describes the approach for evaluating the potential for risk to ecological receptors using historical and recent environmental data from within Area of Concern (AOC) 25 of the Hatco Chemical (Hatco) Site, as defined in the remedial investigation report (Weston 2016). This area is hereinafter referred to Hatco AOC 25. AOC 25a, one of the three subareas of Hatco AOC 25, is the wetland area south of Riverside Drive that receives surface water runoff from a drainage area that includes the Hatco property.

The delineation of the boundary for AOC 25a will be confirmed as part of the 2020 sediment/soil sampling effort, which is described in the *Supplemental Sampling Plan for AOC 25 Hatco Site – Fords, New Jersey* (Weston 2020). AOC 25a represents the portion of Hatco AOC 25 where impacts from the Hatco facility have been identified.

Pathways from the Hatco property and upstream areas to Hatco AOC 25 included Channels A and B to Channel D and the historical Crows Mill Creek alignment. Channel B and Crows Mill Creek predated Hatco's ownership of the property and were part of the existing regional surface water drainage. Channel A was added by Hatco in 1965 as part of the lagoon construction.

Environmental investigations have been ongoing at Hatco AOC 25 since 1992 by Hatco and since the 1980s by the property owner. Investigations have included the collection of surface water, sediment, soil, and groundwater samples, initially for semi-volatile organic compounds (SVOCs) and polychlorinated biphenyls (PCBs), with some metals and volatile organic compound (VOC) analyses. These prior investigations concluded that the principal Hatco-related contaminants of concern (COCs)

within Hatco AOC 25a are bis(2-ethylhexyl) phthalate (BEHP) and PCBs (Weston 2016; ELM Group 2018). These COCs have been determined to have migrated from the Hatco facility to AOC 25a via the historical alignment of Crows Mill Creek and Channel D. Channel D, Crows Mill Creek, and the intervening marsh (i.e., Hatco AOC 25) form a freshwater and estuary wetland system that is currently infested with dense stands of phragmites throughout most of its extent. The system receives water from upland industrial areas to the north, east, and west before emptying into the Raritan River at its southernmost extent. AOC 25a is predominantly wooded wetland with peripheral phragmites stands.

Previous investigations (EPEC) identified two subareas within Hatco AOC 25 as separate from AOC 25a: AOC 4 and AOC D. EPEC AOC 4 corresponds to an unknown railway area release, and AOC D covers the entirety of former Block 61, Lot 2. EPEC's LSRP, Steve Kessel of Brown and Caldwell, issued a Response Action Outcome (RAO) on March 1, 2019, for EPEC's AOC 4 and AOC D, terminating EPEC's remediation for these AOCs.

GreDel owns the lot immediately uphill to the east of Hatco AOC 25a, as well as the lot south of EPEC, which was investigated by Hatco as part of the greater Hatco AOC 25 Former operations on the GreDel lots have included asphalt plants, a junkyard, and a Class B recycling facility; closure of the asphalt plants triggered an ISRA case, which was referenced by NJDEP as PI No. G000041281. This case is currently directed by LSRP Ken Hart, who issued an RAO for specific AOCs on GreDel's lots on August 30, 2013 (with administrative amendment on June 5, 2014). The RAO was issued after placing a cap over historic fill, filing a Deed Notice, and securing a Remedial Action Permit for Soils. The Deed Notice states that the fill is impacted by PCBs, citing concentrations of up to 11.7 mg/kg.<sup>1</sup> The RAO does not close out the entire case, so this case remains open with additional remediation obligation.

The focus of this ecological evaluation work plan is BEHP within AOC 25a. A site-specific remediation goal for PCBs has already been approved by the US Environmental Protection Agency (USEPA) (USEPA 2005) and NJDEP (NJDEP 2006).

The wetlands of Hatco AOC 25, wherein AOC 25a is located (Figure 1-2), are within the drainage area of Crows Mill Creek and are part of a larger wetland complex. Although there is limited information available regarding the ecology of Hatco AOC 25a, Great Ecology (2015) conducted a survey of the wooded wetlands area adjacent to Hatco AOC 25a and West Lake, which is west of the wooded wetlands area. Vernal pools in the wooded wetlands were described as isolated. However, water from the southern end of the wooded wetlands historically flowed onto Hatco AOC 25, so the two areas likely have shared ecology. Likewise, the forested wetland around West Lake is expected to have wetland and terrestrial habitats similar to those at the larger Hatco AOC 25, including AOC 25a.

Currently, Channel D emerges from a culvert under Riverside Drive and flows south into a wetland (Weston 2016), although historically it curved southeast and connected to the old Crows Mill Creek alignment. During its survey of the wooded woodlands and vernal pools to the west of AOC 25, Great Ecology (2015) observed a number of amphibian species, including green frogs, northern spring peepers, New Jersey chorus frogs, bullfrogs, and four-toed salamanders, as well as tadpoles of unidentified species; reptile species, included eastern painted turtles and eastern garter snakes; and several invertebrate species that have aquatic larval stages, including mosquitos, whirligig beetles, damselflies, and dragonflies and dragonfly larvae. Although they were not observed, midges (*Chironomid* sp.), amphipods (*Hyalella azteca*), and oligochaetes are assumed to be present in the wetland, since they are ubiquitous benthic invertebrates that can withstand variable conditions, including those of wetland habitat (Gibbons and Mackie 1991; Beck 1977; Hiltunen and Klemm 1980). No fish

were observed in the vernal pools of the wooded wetland area (Great Ecology 2015), but fish were observed in West Lake, including brown bullhead, banded killifish, and pumpkinseed.

Great Ecology (2015) observed more than 80 wetland/semi-aquatic and terrestrial avian species in the West Lake area, the most abundant and common of which included: wading birds (i.e., herons and egrets), ducks and geese, gulls and terns, cormorants, shorebirds (i.e., killdeer), songbirds, wrens, sparrows, swallows, warblers, swifts, woodpeckers, flycatchers, passerines, finches, chickadees, blackbirds, doves, and hawks.

Crows Mill Creek is considered tidally influenced freshwater (ELM Group 2018). While there is a tide gate upstream from the confluence of Crows Mill Creek and the Raritan River, ELM Group (2018) observed a reversal of surface water flow coinciding with high tide at a sampling location just upstream from the tide gate; furthermore, red-jointed fiddler crab (*Uca minax*), a species common to salt marshes in the eastern United States, was also observed. However, NJDEP classifies these types of streams in the Raritan River basin as FW2-NT (i.e., freshwater not for trout production or maintenance) (Exponent 2006). Salinity in Crows Mill Creek is less than 3.5 parts per thousand (ppt), so NJDEP considers it to be freshwater.

BEHP is a colorless liquid with almost no odor that is used as an additive in plastics to make them more flexible (ATSDR 2002). BEHP is in a class of compounds called phthalate esters but commonly referred to as plasticizers. Despite the differences among reported solubility values, it is understood that BEHP has a low solubility, and the Agency for Toxic Substance and Disease Registry (ATSDR) has accepted the lowest reported experimentally derived value of 0.041 mg/L as the water solubility for BEHP (ATSDR 2002). BEHP has reported Log Kow values of 4.2 to 8.9, indicating its partiality for the non-aqueous phases (Staples et al. 1997; ATSDR 2002). A generally accepted Log Kow value for BEHP is 7.5. As indicated by its Log Kow and low water solubility, the hydrophobic properties of BEHP favor sorption to soil, sediment, or suspended solids (Staples et al. 1997).

A number of ecological receptor groups are expected to be present in and utilize AOC 25a. These include both terrestrial receptors that use the upland soil habitat areas and semi-aquatic or aquatic species that use creek, vernal pool, or other inundated wetland habitats. The list of potential receptors at AOC 25a includes the following:

- ☐ Aquatic-dependent receptors (e.g., benthic invertebrate communities, amphibians, fish, and aquatic plants)
- ☐ Terrestrial invertebrates and plants
- ☐ Aquatic wildlife, such as dabbling ducks (e.g., mallards), wading birds (e.g., great blue heron), and semi-aquatic mammals (e.g., mink)
- ☐ Terrestrial wildlife such as invertivorous birds (e.g., American robin), small herbivorous mammals (e.g., white-footed mouse), and small invertivorous mammals (e.g., shrew)

The assessment endpoint for these receptors is the impact of Site BEHP exposure on survival, growth, and reproduction. This will be evaluated through the comparison of site data to available and relevant BEHP toxicity data.

A general ecological conceptual site model (CSM) is presented in Figure 2-1. Exposures for these receptors include both direct contact with sediment, soil, and/or surface waters and dietary bioaccumulation through direct and indirect ingestion (for higher trophic level organisms). Mobile higher trophic level organisms (i.e., wildlife) that potentially forage within AOC 25a have home ranges that can greatly exceed the extent of AOC 25a, which is less than 1 acre in size.

Sediment and soil data collected within AOC 25a will be used to evaluate the potential ecological exposure of receptors to BEHP. Only surface sediment samples collected from a depth of 0 to 15 cm (0.0 to 0.5 ft) will be used; this is the depth typically used to assess ecological impacts, although depth can vary based on site-specific conditions. BEHP chemistry data will be compared to appropriate ecological thresholds. Other data—such as water salinity, total organic carbon (TOC), and grain size—may also be considered to help evaluate the relevance of potential BEHP ecological toxicity to site-specific conditions. Weston (2020) presents the historical and proposed 2020 soil and sediment sampling locations that will be used to support the ERA evaluation.

A supplemental sampling plan (Weston 2020) describes the collection of soil and sediment samples in spring 2020 in the northern portion of the Channel D wetland to define the boundary of AOC 25a. These samples—which will be collected to support the ERA by supplementing the spatial coverage of previously collected data—include surface (0- to 15-cm) soil and sediment samples for the analysis of BEHP, TOC, and grain size, as well as surface water salinity samples. The sampling areas of focus for the 2020 dataset will be along Channel D and its bank, Crows Mill Creek and its bank, and four transect areas between Channel D and Crows Mill Creek. Sediment and soil samples will be designated as such during field sampling. Sediment samples will be “any material falling within the bed (but not bank) of stream channels, flowing ditches or ponds” (Weston 2020). Within delineated wetland areas outside of stream channels, a sample’s designation as soil or sediment will be dependent on the level of saturation of the soil matrix, as described in the supplemental sampling plan.

Following the guidance of NJDEP (2018) and EPA (1997), toxicity data will be evaluated as part of the ecological assessment. Available toxicity data will be evaluated to determine appropriate levels of BEHP for the protection of ecological receptors. This process will include an evaluation of existing published ecological screening thresholds and general toxicological literature. A search of toxicity databases, such as USEPA’s ECOTOX4 (<https://cfpub.epa.gov/ecotox/>), will be conducted to evaluate relevant ecological toxicity thresholds.

The supplemental sampling plan (Weston 2020) compares historical data to the following BEHP screening levels:

- **Soil** – The screening level of 49 mg/kg is based on an unrestricted use cleanup criterion (a human health risk-based value).
- **Sediment** – The screening level of 0.75 mg/kg is based on the NJDEP ecological screening criterion (a severe effects level) for freshwater sediments (NJDEP 2009).

These screening levels will be evaluated to determine whether they are appropriate for determining adverse effects on ecological receptor populations within AOC 25a. The evaluation will consider the following:

- BEHP literature-based toxicology, including the uncertainties of field- and lab-based toxicity data
- No- and lowest-effect levels and their significance in risk determination and levels of protection
- The relative toxicity of BEHP-exposed invertebrates to higher trophic level organisms; sediment and/or soil toxicity thresholds for wildlife can be estimated using a dietary bioaccumulation model that is dependent on receptor-specific parameters, dietary toxicity reference values (TRVs), and uptake models (i.e., biota-sediment accumulation factors [BSAFs] or biota-accumulation factors [BAFs]).

- The effects of Site-specific sediment and/or soil characteristics (e.g., TOC and grain size) that may affect the bioavailability or toxicity of BEHP

The potential for ecological risk will be evaluated by comparing BEHP concentrations from the comprehensive dataset (i.e., comprising both pre-2020 and 2020 surface soil/sediment samples, as described in Section 3) to appropriate ecological thresholds within a relevant spatial scale. The spatial scale will consider aquatic versus terrestrial habitats, as well as the spatial extent of AOC 25a relative to the home range or relevant scale of an ecological population or community. Consistent with NJDEP (2018), sediment data will be compared to sediment toxicity thresholds and soil data will be compared to terrestrial toxicity thresholds; any substrate that is both soil and sediment (depending on the time of year) will be compared to both.

The outcome of the ecological assessment will be one of two conclusions:

- If BEHP concentrations within AOC 25a are not expected to result in adverse effects on ecological populations, no further ecological evaluation will be conducted.
- If BEHP concentrations within AOC 25a are expected to result in adverse effects on ecological populations, the following further evaluations will be considered in consultation with NJDEP:
  - Confirmation of assumptions used in assessment (e.g., pathways, receptors, and habitat areas) through a Site visit
  - A spatial evaluation of “hot spots” with the highest BEHP concentrations driving exceedances of a risk threshold
  - A focused field study to evaluate the ecological receptors/receptor groups potentially at risk
  - Development of site-specific remediation thresholds through the use of spiked bioassays

The ecological risk evaluation for AOC 25a will consist of a phased approach, dependent on the results of the initial assessment. The evaluation that will be conducted per the methods outlined in this Work Plan will consider the relative areal extent of BEHP within ecological areas of AOC 25a and to what extent the concentrations of BEHP exceed toxicity thresholds. Further discussion with NJDEP will determine future, if any, additional phases of the ecological assessment.

### **General Comments**

This ecological risk assessment (ERA) work plan indicates that potential ecological risks of BEHP to ecological receptors will be evaluated. Both USEPA and NJDEP recommend a tiered approach for the evaluation of ecological risk. There is no indication that there will be a screening level ERA (SLERA) prepared or that one was. If a SLERA has already been prepared, it should be summarized in this work plan and presented to both agencies for review. If a SLERA was not prepared yet, it should be done before a baseline ecological risk assessment is prepared.

*A Supplemental Sampling Plan for AOC 25 Hatco Site – Fords, New Jersey* (Weston 2020) describes the collection of soil and sediment samples in spring 2020 in the northern portion of the Channel D wetland to define the boundary of AOC 25a. Did this sampling occur already? Did EPA Region 2 receive and/or comment on the sampling plan?

All historical data on sampling within the Channel D wetlands for BEHP and PCBs should be presented in this report along with appropriate figures for comparison purposes and to determine if the correct subarea within AOC 25 is being evaluated.

Section 1.1, 2<sup>nd</sup> paragraph on page 3 states that “AOC 25a represents the portion of Hatco AOC 25 where impacts from the Hatco facility have been identified.” USEPA and NJDEP need to determine if subarea AOC 25A is the only off-site area within Wetland D that is impacted by former site operations.

Even though surface water samples were not collected in 2020, historical surface water data should be presented in the ERA report compared to appropriate ecological screening criteria.

### **Specific Comments**

1. Page 8, Section 1.2, last paragraph – The site-specific remediation goal for PCBs that has already been approved by the US Environmental Protection Agency (USEPA) (USEPA 2005) and NJDEP (NJDEP 2006) should be presented here. If there is a previously identified BEHP ecological screening level or remediation goal available, it should be presented here as well.
2. Pages 12 -13, Section 2.3, last paragraph – This paragraph includes information on forage and home ranges of “mobile higher trophic level organisms (i.e., wildlife)” exceeding the size of subarea AOC 25A. For a Screening Level Ecological Risk Assessment (SLERA), it is assumed that wildlife species spend 100% of their time in the area and obtain 100% of their food from the area in order to be conservative.
3. Page 15, Section 3.2, 2<sup>nd</sup> paragraph – The definition of sediment presented here is “any material falling within the bed (but not bank) of stream channels, flowing ditches or ponds” (Weston 2020). This definition seems limited and does not include potential floodplains. The definition in the NJDEP Ecological Evaluation Technical Guidance should be used for sediment.
4. Page 17, Section 4, 1<sup>st</sup> paragraph, 1<sup>st</sup> bullet – This bullet lists the BEHP soil screening level that was used in the supplemental sampling plan (Weston 2020) to compare to historical data; the screening level of 49 mg/kg is based on an unrestricted use cleanup criterion (a human health risk-based value). This value is based on the protection of human health not ecological receptors; a more ecologically protective BEHP soil screening value should be 0.925 mg/kg which is listed in the NJDEP Ecological Screening Criteria table as the Wildlife PRG for flora and fauna.